[redacted]

PIONEER VENUS
12 SECOND ELECTRON TEMPERATURE DENSITY
(UADS - LFD)
78-051A-01C

#658

PIONEER VENUS
HI-RES NE (MIN 1-S)
78-051A-01D

PIONEER VENUS
IONOP.,BOWSH, LOC.; IPE-EUV
78-051A-00I, 01E

PIONEER VENUS

12 - SECOND OETP (UADS-LFD)

78-051A-01C

THIS DATA SET CONSISTS OF ONE MAGNETIC TAPE. THE TAPE IS 9-TRACK 6250 BPI, ASCII, WITH ONE FILE OF DATA. THE TAPE WAS CREATED ON THE VAX, WITH A LABEL NAME OF "UATAPE". THE D AND C NUMBER ALONG WITH ITS TIMESPAN IS AS FOLLOWS:

D#	C#	FILES	TIMESPAN
D-072950	C-026283	1	12/05/78 - 10/07/92

To: National Space Science Data Center March 15, 1994

From: Larry H. Brace/914

Subject: Final submission of Unified Abstract Data from the Pioneer Venus Orbiter Electron Temperature Probe

The accompanying tape is the final version of the low resolution measurements of electron temperature, Te, density, Ne, and spacecraft potential, Vs, from the PVOETP instrument on the Pioneer Venus Orbiter (PVO). These low resolution data are given at 12 second intervals and are known in the PVO community as the Unified Abstract Data (UADS). The tape is identical to one submitted recently to the Planetary Data System. It is intended to replace UADS tapes submitted earliler while the PVO mission was still in progress. The earlier tapes should be discarded or marked as obsolete, since they do not contain data from the last year or two of the mission, and the earlier data are less complete in other regards.

The attached documentation describes the OETP measurement approach, how the data were processed, and assesses the accuracy. You may distribute it to anyone who asks for the data from this instrument.

You may notice that the documentation refers to other OETP data products such as the ionopause file, the bowshock file, the solar EUV file, and the high resolution Ne file. Final versions of these data files have been submitted to the PDS and are to be committed to compact disc in the near future. I have lost track, however, of whether the NSSDC eventually gets these data in that form from the PDS, or are the PVO investigators supposed to send these other files on tape?

Please contact me at x6-8575 if you have any questions about the tape.

Sincerely,

Larry H. Brace
Code 914

For format or other questions, call Bob Theis @ 63620

```
!The following is a guide to interpreting the data in the
!Pioneer Venus Unified Abstract Data System tape format.
!The description lines all begin with a !
!The first record gives the number of parameters followed by
!the 4 letter mnemonic for the parameter.  In this particular
!case for the Electron Temperature Probe the parameters given
!are ELTE, the electron temperature in Deg. K, ELNE, the
!electron density in number/cc, and VS the spacecraft potential
!in volts.
  3 ELTE ELNE VS
!The second record contains the format which may be used to read
!all of the remaining records.
(I8,I9,I5,I6,3F11.2)
!The third record contains values which are used to indicate
!that no measurement was available.
       0        0    0     0 9999999.00 9999999.00 9999999.00
!The fourth record to the end are the data, consisting of the
!date in year and day of year, the UT in milliseconds, the
!orbit number and the time from periapsis in seconds.
 1978339 54454817    1  -228 9999999.00     574.00      -2.10
 1978339 54550817    1  -132    5470.00   12900.00      -0.42
 1978339 54682817    1    12    3960.00   11800.00      -0.57
 1978339 54814817    1   144    6900.00    1090.00       0.38
 1978340 51262817    2  -444 9999999.00     243.00       2.84
 1978340 51322817    2  -384    8760.00   55800.00      -1.75
```

TAPE LABEL UATAPE

VAX COPY FORMAT

1 FILE NAMED UATAPE.DAT

WHICH CONTAINS 93060 RECORDS

TAPE IS 9 TRACK 6250 DENSITY

78-051A-01C

Pioneer Venus Orbiter OETP Data - 7/23/93

INTRODUCTION

This document describes the various Orbiter Electron Temperature Probe (OETP) data products that have been submitted to the National Space Science Data Center and the Planetary Data System.

The OETP has been described by Krehbiel et al. (1980). The instrument uses two cylindrical Langmuir probes (axial and radial) which protrude into the surrounding plasma to measure the ionospheric electron density and temperature (N_e and T_e), the ion density (N_i), and the spacecraft potential, (Vs). The probes were operated independently by a common electronics unit. All of the data submitted here were derived from the radial probe, since its longer boom provided measurements over a wider range of N_e, a fact that caused the investigators to dedicate the limited telemetry allocation to that probe during most of the PVO mission. During the first 70 orbits, the axial probe was used more often, so many of these early orbits are not represented in the archived OETP data.

As an ionosphere instrument, the OETP was capable of accurate plasma measurements only while the spacecraft was within the ionosphere; an interval of only a few minutes during each 24 hour orbit. However, the N_e measurements made at higher altitudes have proved useful, so they are included in the High Resolution file which extend above the ionosphere. These data are useful for the study of smaller scale features and for identifying the location of the ionopause and the bow shock. The measurements of photoelectron emission from the probe (net ion current in regions of very low N_e) have permitted the intensity of the solar EUV flux to be derived, and a file of daily values of this current is presented. Details of the plasma measurements method can be found in the Krehbiel et al. (1980) paper, and the method for solar EUV flux measurement is described by Brace et al.(1988). The data formats for these files are described at the end of this report. For further information on access to the OETP raw telemetry data please contact Robert Theis or Walter Hoegy, Code 914, NASA/Goddard Space Flight Center, Greenbelt, MD 20771. (301-286-3620, and 301-286-3837).

The OETP measurements have been used in many Venus investigations. Among these is a paper by Theis et al. (1984) who modelled the N_e and T_e data to describe the local time and altitude variations in the Venus ionosphere and their implications for nightward ion flow. Brace et al.

(1987, 1990) used the OETP data to examine the nightside ionosphere out to very high altitudes. A more complete bibliography publications by the OETP investigators is given at the end of this document.

TYPES OF OETP DATA Products

Five types of OETP data files are available in the NSSDC and PDS. These are described briefly in this section. More details on the measurements and their accuracies are provided in later sections.

(1) The UADS. The Unified Abstract Data System, UADS, was conceived as a file which would combine the data from all of the PVO in situ instruments on a common time base to facilitate analysis. The temporal resolution of 12 seconds was adopted since it was approximately equal to the spin period of the satellite which for most instruments determined the spatial resolution of the measurements. The OETP input to the UADS includes measurements of N_e, T_e, and Vs, based on computer fitting of individual voltampere curves. Since the curves were recovered at rates either higher of lower than the UADS rate of 12 seconds, the value of the parameter at the UADS entry times had to be obtained by interpolation from nearby measurements. When the spacecraft data rate was very low not all UADS 12 second time slots were filled to avoid interpolation over too large an interval.

UADS measurements are only provided when the spacecraft is in the ionosphere and the density exceeds a threshold that depends on various experimental background factors, such as spacecraft photoemission, spacecraft charging, and electrical shielding of the probe by the spacecraft ion sheath. For this reason, the UADs is not the best source of information on the ionopause and its density gradients. These feasures are better resolved in the High Resolution N_e file that is described next.

(2) The High Resolution N_e File. These data are based on measurements of the electron saturation current or the ion saturation current taken from as many voltampere curves as the telemetry data rate permitted. Since N_e is assumed equal to N_i everywhere in the ionosphere, either can be used as a measure of N_e. The ion current is used at high densities ($N_i > 4 \times 10^4 cm^{-3}$) and the electron current is used at lower densities. Typically, 4 to 8 high resolution density samples are obtained in the interval between recovered voltampere curves, although this ratio is bit rate dependent. This provides N_e and N_i measurements at much smaller intervals than is possible from the voltampere curves themselves. High resolution measurements are

typically available at 2 to 8 second intervals depending upon the telemetry rate available to the OETP at the time.

The measurements in the High Resolution N_e file are given for a one hour period centered on periapsis, in spite of the fact that the spacecraft may be outside the ionosphere for much of this interval. The measurements made outside the ionosphere are heavily spin modulated by spacecraft photoelectrons, but they are included because they show the ionopause density gradient and other real N_e structure that lies above the ionosphere (such as; bow shocks, plasma clouds, magnetosheath electron fluxes, spacecraft photoelectron densities, etc). These features are not generally found in the UADS file which only contains measurements made within the ionosphere. More information on the High Resolution N_e measurements, and their limitations is contained in the section on measurement accuracy.

(3) The Ionopause File. This file gives the orbit-by-orbit times and locations of the ionopause crossings, which are evident as sharp gradients in N_e at the top of the ionosphere. (These crossings always occur within 30 minutes of periapsis, so they may be seen in the High Resolution N_e files).

(4) The Bow Shock File. This file gives the orbit-by-orbit times and locations of the bow shock crossings, which are characterized by distinct changes in N_e. Multiple shock crossing are listed if they are sufficiently separated to be resolved accurately. (Bow shock crossings will be evident in the High Resolution N_e File only when they occurred within 30 minutes of periapsis). The bow shock crossings are usually obtained from pass plots that extend 100 minutes either side of periapsis, but these plots have not been archived since there is little else of value in them.

(5) The Solar EUV Daily Values File. This file gives the magnitude of the photoemission current from the radial probe, I_{pe}, (in units of 10^{-9} amps) which is directly proportional to the total solar ionizing flux. I_{pe} dominates the ion current measurements outside the Venusian ionosphere, making possible the serendipitous measurement of the total solar EUV flux. The latter is an important parameter because solar EUV is the main source of ionization and heating for the Venusian thermosphere and ionosphere. The method is discussed by Brace et al., (1988).

The pe current measurements are taken just before PVO leaves the solar wind and enters the magnetosheath (usually an hour or two before periapsis). This approach provides a measure of the solar EUV flux that the Venus thermosphere was receiving just before the periapsis measurements were taken. The maximum value of the spin modulated I_{pe} is taken because it corresponds to a probe orientation perpendicular to the Sun when the maximum area of the probe is exposed to the Sun. I_{pe} is proportional to the intensity of the ionizing component of solar radiation, so it is possible to derive the total solar EUV (and far UV) flux. Ly alpha contributes approximately half of the I_{pe} while nearly all of the rest is produced by radiation between 200 A and 1200 A which ionizes, excites and dissociates thermospheric neutrals. The equation for the conversion of I_{pe} to solar EUV total flux is described later.

Raw Data Tapes

The OETP raw telemetry data were provided by the PV Project on tapes called Experiment Data Records (EDRs); one tape for each of the approximately 5000 orbits. To conserve storage space, the EDRs were compacted onto 6250 bpi magnetic tapes, each containing the data from 40 to 50 consecutive orbits. These compacted EDRs are now stored at Goddard Space Flight Center, and the original EDRs were returned to NASA for reuse. There is no current plan for submission of the 100 or so compacted tapes to the NSSDC or the PDS for longer term storage, but they are available if such a plan arises. There is a tentative plan to further condense the raw OETP data onto optical disks for ease of storage and permanence. (For further information on the current status of the raw data, contact Walter R. Hoegy or Robert F. Theis, Code 910, NASA/GSFC, Greenbelt, MD 20771, phone 301-286-3837 or 286-3620).

Voltampere Curves

Note that raw voltampere curves are not included in the NSSDC and PDS data submissions; only the analyzed products of curve fitting. The curves themselves can only be obtained by accessing the OETP compacted magnetic tapes and applying appropriate computer codes that strip out the curves from the OETP bit stream. These data products are not usually archived by the data centers. This is unfortunate because we have found the curves to be rather useful in unanticipated ways. For example, small scale N_e structure has been discovered as wavelike modulation of the voltampere curves (see reference 80 at end of report). Also, non-maxwellian electron energy distributions are sometimes seen as nonexponential electron retarding regions. (See Walter Hoegy or Robert Theis at NASA/GSFC for information on the OETP raw data base and the necessary programs to access the curves).

MORE DETAILED DESCRIPTION OF THE OETP DATA FILES

The UADS File

This file gives the N_e, T_e and V_s measurements derived by fitting the radial probe voltampere curves taken whenever PVO was within the ionosphere (ie., between the inbound and outbound ionopause crossings). Data from essentially every orbit in 1979 to the middle of 1980 included ionosphere transits. After the summer of 1980, however, there was insufficient fuel to maintain periapsis at low altitudes, and it began to rise slowly. After April 1981 periapsis was above the altitude of the dayside ionopause, so the spacecraft encountered the ionosphere only in the terminator regions and on the nightside where the ionosphere extends to much higher altitudes. Dayside measurements again became available early in 1992 when periapsis returned to low enough altitudes. The PVO Entry period between July and October 1992 provided only nightside periapsis data. During the intervening period (1981-91), only nightside UADS measurements in the high altitude (altitudes ~500-3000 km) ionosphere were available. Note that High Resolution N_e data from the 1981-91 interval provide measurements in the dayside magnetosheath and in the solar wind, but these data have limited accuracy because of spacecraft photoelectron contributions. See Brace et al, 1988 (ref. 53) in the bibliography for further details on the interpretation of High Resolution measurements made outside the ionosphere.

As noted earlier, the geophysical values are listed at 12 second intervals in the UADS. Each OETP entry represents a time-weighted average of those radial probe measurements taken within approximately 10 seconds of the UADS-assigned times. If no voltampere curves were recovered within that 20 second interval (this occurs at very low spacecraft telemetry rates), no UADS value is entered in that 12 second slot. The instrument actually takes voltampere curves at a rate of 120/minute, but telemetry rate limitations permit the recovery of raw voltampere curves at intervals between 4 to 32 seconds, depending upon the telemetry rate and spacecraft data format currently in use.

The N_e values in the UADS file may actually be based on either the ion or electron current collected by the probe, depending upon the magnitude of the density at the time. The radial probe electron currents saturate the electrometer when $N_e > 4x10^4 cm^{-3}$, so it is necessary to switch over to N_i measurements at that point. Since the ion currents are about a factor of 50 smaller, the N_i measurements can be made up to densities of about 2×10^6

cm^{-3}, much greater than is present anywhere in the Venus ionosphere. We assume that $N_i = N_e$ everywhere in the ionosphere, so either may be used to construct the UADS file. To minimize the discontinuities at the N_e/N_i switch-over point due to systematic measurement errors, N_e is normalized to N_i using a small universal correction factor. This factor is 0.7, and is based on comparisons of the overlapping N_e and N_i measurements from many individual orbits.

There are good theoretical reasons to believe that the N_i measurements are inherently more accurate at densities exceeding 3 or 4x10^4 cm^{-3}, so this normalization approach improves the accuracy of the N_e measurements. The N_i measurements become less accurate at lower densities because of uncertain changes in the ion composition, ion drift velocity, and a positive ion current component produced by photoelectrons (I_{pe}) leaving the probe. I_{pe} becomes comparable to the true ion currents at N_i of approximately 1x10^{4}cm^{-3}. The pe currents produce a spin modulated signal that is modelled using measurements made in the solar wind just prior to the bow shock crossing where the ambient densities are too small to produce detectable ion currents. This spin modulated I_{pe} waveform, whose amplitude may differ from orbit to orbit because of solar EUV variations, is subtracted from the net positive current measurements made in the subsequent ionospheric passage. This subtraction gives the true ion current which is directly convertible to N_i. The spin maximum I_{pe} for each orbit is also used to construct the solar EUV file, as is described later.

Because of the low spatial resolution of the UADS, and the fact that only ionosphere data are included, this file is not the best source of information about the ionopause. Features such as the ionopause, and plasma clouds above the ionopause, are resolved better using the High Resolution Data File which is not restricted to measurements within the ionosphere. This file is discussed next.

High Resolution N_e File

The High Resolution file provides measurements of N_e (or N_i) within 30 minutes either side of periapsis at somewhat higher resolution than is possible from the voltampere curves, however, these measurements are less accurate. The accuracy is especially reduced when the spacecraft is outside the ionosphere, where N_e is typically well below 100 cm^{-3}. In sunlight, spacecraft photoelectron densities at the radial probe location are of the order of 30-50 cm^{-3}. In darkness, the N_e measurements can be made down to densities of about 2 cm^{-3} because the pe background is absent. However, the measurements made in the Venus umbra are often degraded at low densities because of the presence of hot electrons that charge the spacecraft to potentials that lie beyond the range of the OETP sweep voltage. This makes it impossible to drive the probe positive with respect to the plasma potential. In addition, deBye shielding causes the probe to become enveloped in the ion sheath of the spacecraft at very low densities, further reducing its access to the ambient ionospheric plasma. Empirically derived corrections for this effect have been applied to the high resolution data in order to provide at least a lower limit on the true value of N_e, but the errors could exceed a factor of 2 at densities below 10 cm^{-3}. When the electron current is too small to be read, no value of N_e is entered and a gap appears in the file. When the electron current at maximum positive voltage is readable but is less than a certain very low value an N_e value of 2 cm^{-3} is entered in the High Resolution file simply to serve as an upper limit on N_e, and to show that data were actually being taken (not a gap in the telemetry data).

In summary, the high resolution N_e measurements provide about a factor of 8 higher resolution than the UADS file whose resolution is limited by the recovery rate of raw voltampere curves. Therefore the high resolution data better resolve such small scale features as the ionopause and the plasma clouds often found above the ionopause. Also, the UADS densities often stop somewhere within the ionopause density gradient, so this feature can best be resolved using the High Resolution data. However, certain artifacts have not been removed from the data, so one must be careful not of over-interpret them. The most important of these is a (usually small) jump discontinuity in N_e when the spacecraft enters or leaves the umbra where the spacecraft potential changes drastically. (See section on accuracy)

Ionopause and Bow Shock Crossings

The ionopause and bow shock crossing times and locations are easily identified in the high resolution N_e measurements (Theis et al., 1980). These files contain the UT, altitude, latitude, SZA and local time of each crossing.

On the dayside, the ionopause is taken (somewhat arbitrarily) at the level in the steep gradient of the ionopause where $N_e = 1x10^2$ cm^{-3}. On the nightside, the ionopause is selected at somewhat lower densities because the absence of spacecraft photoelectrons lowers the N_e measurement threshold. In both cases, the intent is to identify the ionopause as the point where the first rise of N_e above the background density occurs. Of course, the ionopause itself is not a point but is the extend region in which the ionopause density gradient occurs.

The bow shock is a much more discrete feature in the data than the ionopause. Multiple shock crossings sometimes occur because the shock often moves at higher velocities than the satellite. In these cases, only the outermost shock crossing is recorded, unless the separation between the crossings is greater than a minute or two. The occurrence of multiple shocks in the Bow Shock File provides a record of the orbits in which the solar wind itself was probably highly variable. Because of the geometry of the orbit, most shock crossings were in the range of 45° to 135° SZA. However, the nose region of the shock was explored between 1985 and 1987 when PVO periapsis was near the equator and was at altitudes between 2000 and 2300 km. During these years near solar minimum the nose of the shock often moved down into that altitude range (Russell et al, 1988). During the subsolar passages of these years, the orbit approximately paralleled the shock, sometimes inside, sometimes outside, thus providing interesting snapshots of its movements.

Solar EUV Daily Values

This file contains the daily average value of the photoelectron emission current, I_{pe}, from the radial probe, usually measured about 1 hr before periapsis. The I_{pe} values are given in units of 10^{-9} amperes. The data cover the interval from 1979 through early 1992 when periapsis got low enough to cause photoelectric yield changes that have not been fully resolved and corrected for appropriately.

The daily I_{pe} measurements can be converted into the total solar EUV flux (V_{EUV}) using the following the equation given by Brace et al., (1988),

$$V_{EUV} = 1.53 \times 10^{11} I_{pe} \quad (\text{photons/cm}^2\text{/s})$$

V_{EUV} varied over the mission from a low of about 8×10^{11} to 20×10^{11} ph/cm^2/s, including the solar cycle and solar rotation components. V_{EUV} represents the total solar flux, weighted by the known wavelength-dependent yield of the collector. A standard Hinteregger solar EUV/UV spectrum is assumed to derive the coefficient that relates I_{pe} to the toal photon flux, but the measurement is relatively insensitive to this assumption over the typical range of variations observed in the solar spectrum.

The V_{EUV} data have been useful in the study of solar EUV effects on the ion production and electron heating rates in the Venus ionosphere. V_{EUV} variations have been correlated with changes in the density and temperature of the ionosphere (Elphic et al., 1984), the height of the bow shock (Alexander et al., 1985, Russell et al., 1988), and changes in the density and temperature of the thermosphere (Mahajan et al., 1990).

DATA QUALITY/ACURACY

UADS Accuracy

The UADS data are based on operator-assisted voltampere curve fits. The absolute accuracy of the data depends primarily upon the accuracy of the Langmuir probe theory (Krehbiel, et al., 1980) and our success in avoiding the inclusion of data from curves that were obtained in situations in which the theory does not apply (e.g., probe in wake of the telemetry antenna, very low densities, pe contamination, spacecraft potential too negative, etc.). Where these effects have been avoided, the errors in T_e should not exceed 5% when N_e exceeds 500 cm^{-3} in sunlight and about 30 cm^{-3} in darkness. However, T_e errors may be larger in regions of great spatial structure where the plasma parameters change while they are being measured, or in regions where the electron energy distribution is nonmaxwellian or appears to have two temperatures. These conditions are often found in the nightside ionosphere and at the ionopause. In these cases, the curve-fitting is done so as to measure the temperature of the lower temperature component of the plasma. The curves would have to be refitted to obtain information on the higher temperature component.

The accuracy of the N_e measurements is determined by the accuracy of the N_i measurements to which they are normalized by a fixed factor that was determined by comparisons at densities in the vicinity of 4×10^4 cm^{-3}. Therefore the N_e accuracy is nominally 10%, but the error increases at low densities where pe background and/or spacecraft charging effects can be important, as described earlier. N_e is given in the UADS file for densities down to 2 cm^{-3} and T_e for densities down to 10 cm^{-3}, which are observed only in the nightside ionosphere and ionotail. The N_e error is expected to grow as the density approaches these limits, but the T_e measurements are less subject to error at low densities because knowledge of Vs is not needed to obtain the temperature. In spite of the reduced accuracy, N_e measurements below 30 cm^{-3} are retained in the UADS file because they do reflect real variations that may be of interest even when their absolute accuracy may be uncertain by a factor of 2 or more. Examples include the detection of weak ionospheric tail rays and plasma clouds (Brace et al., 1987).

The error in N_i is not expected to exceed 10% at densities above 4 x10^4 cm^{-3}. N_e is used for densities below 4 x10^4 cm^{-3}. As noted earlier, N_e is normalized to N_i at their overlap point to gain the greater inherent accuracy of the ion measurements. The normalization factor is based on the overlapping N_e and N_i measurements from many orbits, and the factor does not change throughout the mission. Therefore, small discontinuities in the density measurement may sometimes be seen at the crossover point if ionospheric conditions lead to unusual spacecraft potentials, ion compositions, or other factors that are assumed constant when adopting a fixed relationship between the ion and electron currents. We assume that the normalization factor remains constant over the full range of N_e, and this may not be correct.

High Resolution File Accuracy

In general, the high resolution N_e measurements have a lower absolute accuracy than the UADS (voltampere curve) measurements because factors such as the spacecraft potential and T_e are not available to calculate N_e more precisely. To reduce such errors in the high resolution data, they are normalized to the voltampere curve measurements. This normalization is entirely different from the N_e-N_i normalization employed in deriving the UADS data.

Another source of error in the High Resolution N_e measurements is the jump discontinuities that occur when the spacecraft passes from sunlight to shadow. An abrupt change in spacecraft potential occurs at that point, and this changes the probe voltage which is referenced to the spacecraft. The N_e measurements cannot easily be corrected for this change because they are not based on voltampere curves but measurements at a fixed positive potential. Therefore a discontinuity may occur in N_e at the sunlight-shadow boundary if N_e is sufficiently low that spacecraft photoelectron emission affects the spacecraft potential.

The precision of the high resolution data is probably somewhat better than that of the UADS data because the latter may suffer from the effects of volt ampere curve distortion due to small scale density variations and spin effects which do not show up in the single point samples used in the high resolution measurements. This feature makes the high resolution data more valuable in resolving small scale, and small amplitude plasma structure.

Ionopause Location Accuracy

The ionopause location is selected at that point in the steep gradient of the ionopause where N_e crosses through the level of 1×10^2 cm^{-3}. When the spacecraft is in darkness, the pe background is absent and the ionospheric N_e is also much lower, so the ionopause is identified as the first rise in N_e above whatever background is present. The ionopause is identified by a human operator who views each high resolution N_e pass plot on an interactive computer terminal. He selects the ionopause somewhat subjectively as the time of the first rise above the background N_e, which may consist of magnetosheath plasma or photoelectrons. The 40 minute pass plots used for this purpose provide only a 5-10 second accuracy in the crossing times. When irregularities or waviness in the ionopause produce several ionopause crossings, the outer most crossing is the only one identified.

Bow Shock Location Accuracy

The bow shock is selected from 200 minute pass plots by marking the UT of the sharp change in the amplitude of N_e at the shock discontinuity. The resolution of the shock crossing time is of the order of 1 minute on these plots, but this could be improved to a few seconds if expanded plots were used. There is no plan currently to provide the ultimate resolution available in bow shock crossing time and location.

The solar EUV measurement accuracy

The I_{pe} measurements themselves are made with an absolute accuracy of 1 to 2%, depending upon where the current falls within the decade range of the ranging electrometer. The absolute accuracy of the measurements is also limited by our knowledge of the photoelectric yield of the radial probe collector, and our assumption that a Hinteregger standard EUV/UV spectrum is applicable at the time of the PVO measurements. We estimate a 10% absolute accuracy in the total EUV flux and a 1 to 2% relative accuracy or precision provided by the accuracy of the current measurements themselves. See Brace et al.(1988) for details of the method.

FORMAT OF THE FILES

The following is a guide to reading the data in the Pioneer Venus Unified Abstract Data System tape format. The first record gives the number of parameters, followed by the 4 letter mnemonic that identifies the parameter. The parameters given are ELTE (T_e in units of Deg. K), ELNE, (N_e in number/cc), and VS (Vs in volts) in following format

```
3 ELTE ELNE VS
```

The second record contains the format which may be used to read all of the remaining records.

```
(I8,I9,I5,I6,3F11.2)
```

The third record contains values which are used to indicate that no measurement was available.

```
        0         0    0       0 9999999.00 9999999.00 9999999.00
```

The fourth record to the end of the file, consists of the date (year and day of year), the UT (milliseconds), the orbit number and the time from periapsis (in seconds). The last three columns are T_e, N_e, and Vs.

```
1978339 54454817    1  -228 9999999.00       574.00        -2.10
1978339 54550817    1  -132    5470.00     12900.00        -0.42
1978339 54682817    1    12    3960.00     11800.00        -0.57
1978339 54814817    1   144    6900.00      1090.00         0.38
1978340 51262817    2  -444 9999999.00       243.00         2.84
1978340 51322817    2  -384    8760.00     55800.00        -1.75
```

The next file contains ionopause crossing information. This file is formatted for printing and is self explanatory.

```
ORBIT  DATE PERIAPSIS                      INBOUND CROSSING                                 OUTBOUND CROSSING
            HH:MM:SS      SECS  HH:MM:SS   LAT  LST    ALT     SZA      SECS  HH:MM:SS    LAT  LST     ALT    SZA
   1  78339  15:11:12     54409  15: 6:49   39.7 15.6   601.    63.4     54884  15:14:44    1.5 16.4    522.  66.2
   2  78340  14:21:42     51276  14:14:36   52.1 15.2   832.    66.4     52130  14:28:50  -15.8 16.8    834.  72.9
   3  78341  14:31:46     51971  14:26:11   45.9 15.6   579.    66.2     52690  14:38:10  -13.0 16.9   687.   73.7
   4  78342  14:40:12     52272  14:31:12   59.6 14.9  1110.    69.5     53271  14:47:51  -18.7 17.1   867.   77.1
```

The next file contains bowshock crossing information. This file is formatted for printing and is self explanatory.

```
ORBIT  DATE PERIAPSIS                      INBOUND CROSSING                                 OUTBOUND CROSSING
            HH:MM:SS      SECS  HH:MM:SS   LAT  LST    ALT     SZA      SECS  HH:MM:SS    LAT  LST     ALT    SZA
   1  78339  15:11:12     51512  14:18:32   43.9  5.4 12044.  100.2         0   0: 0: 0    0.0  0.0      0.    0.0
   2  78340  14:21:42     49079  13:37:59   49.1  5.8  9899.   96.4         0   0: 0: 0    0.0  0.0      0.    0.0
   3  78341  14:31:46     50202  13:56:42   56.3  6.3  7725.   91.3         0   0: 0: 0    0.0  0.0      0.    0.0
   4  78342  14:40:12     49872  13:51:12   45.1  5.8 11284.   96.2     57078  15:51:18  -67.8  2.0 16416.  109.1
```

The next file contains Venus Solar Flux information in the form of I_{pe} values in units of 10^{-9} amperes.. This file is formatted for printing and is self explanatory. The total solar EUV flux (V_{EUV})is derived by multiplying by the factor given in the equation presented earlier.

```
Dates 78339-78348  Orbits    1-  10 ipe   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Dates 78349-78358  Orbits   11-  20 ipe   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Dates 78359-79003  Orbits   21-  30 ipe   0.00  0.00  0.00  0.00 10.30  0.00  0.00  0.00  0.00 10.30
Dates 79004-79013  Orbits   31-  40 ipe   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
Dates 79014-79023  Orbits   41-  50 ipe   0.00 10.30  0.00  0.00  0.00 10.30 10.02 10.02  0.00 10.02
Dates 79024-79033  Orbits   51-  60 ipe   0.00  0.00 10.02 10.11  0.00  0.00  0.00  0.00  0.00  0.00
Dates 79034-79043  Orbits   61-  70 ipe   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00 10.98 11.19
Dates 79044-79053  Orbits   71-  80 ipe  11.03 11.19 10.34  9.74 10.39 11.40 11.61  0.00 11.40 10.78
Dates 79054-79063  Orbits   81-  90 ipe   9.52  0.00  9.70 10.11  9.97  0.00  9.97  9.65  0.00  9.52
Dates 79064-79073  Orbits   91- 100 ipe   9.70 10.39 10.54 10.59 10.78 10.83 10.98 10.88 10.83  0.00
```

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The Orbiter Electron Temperature Probe (OETP) LFDF Files

PROPOSED PIONEER VENUS NSSDC LOW-FREQUENCY DATA FORMAT

This document describes a suggested format to be used by all investigators for the submission of their data to the National Space Sciences Data Center. The overall specification will require that all data be coded into ASCII, and written onto standard ½-inch 1600-bpi 9-track tapes. The logical record length will be fixed for a given tape, as well as the physical blocksize. Blocksizes should be large enough to avoid wasting tape, but should not exceed 8000 bytes in order to avoid making excessive demands on user programs for memory. The first three records of any of these tapes will be formatted as follows.

Record 1: The format to be used is (I3,n(1X,A4)) where "n" is the number of data items in each record.

```
  4 ELTE ELNE MI   VS                       (for OETP)
  7 ETEM SPOT TONE TTWO XVEL YVEL ZVEL      (for ORPA)
  ↑ ↑    ↑    ↑    ↑    ↑    ↑    ↑
  3 5    10   15   20   25   30   35
```

Example 1: The first record in each tape file. Note that new value types with new 4-character designations can be added as necessary.

Record 2: This record contains the format in which all succeeding records are written. The first 4 format items specify the date, time, orbit, and time tag, and will appear in the same format on all tapes.

```
(I8,I9,I5,I6,4F9.2)                     (Appropriate for OETP)
↑
1
```

Example 2: The second record in each tape file.

Record 3: This record will contain zeroes for the first four fields (date, time, orbit, and time-tag), and in addition will have a fill value in each data value location. This value will be used by any program reading the data to identify fill data in subsequent input records.

```
       0        0    0     0999999.99999999.99999999.99999999.99
       ↑        ↑    ↑     ↑        ↑        ↑        ↑        ↑
       8       17   22    28       37       46       55       64
```

Example 3: The third record in each tape file. (Appropriate for OETP).

Record 4 to ∞: These records contain the date, time, orbit, and time-tag for each time which has any non-fill data.

```
 1981207 43527786  879 -1788  2345.67 78543.89999999.99    16.20
       ↑        ↑    ↑     ↑        ↑        ↑        ↑        ↑
       8       17   22    28       37       46       55       64
```

Example 4: All records after the third in a tape file. (Appropriate for OETP).

As can be inferred from the above example, the date is coded as YEAR,DAY with the 19 included in the year. The time is in milliseconds, orbit number is self-explanatory, and the time tag is the usual value ranging from -1800 to 1800 in increments of 12.

The project-provided tape of SEDR information would be the source of the official dates and times to be used by all other investigators.

Nothing in the above format would preclude investigators from producing a tape containing the data from more than one experiment.

The external label on the tape should be type-written, and contain the following information:

- Full name of experiment data contained on tape.[1]
- Start date, time, and orbit number of data on the tape.
- Stop date, time, and orbit number of data on the tape.
- Production date of the tape.
- The density (1600-bpi) and number of tracks (9) at which the tape was recorded.
- An estimate of the amount of tape used.
- The physical blocksize used in writing the tape.
- A name and phone number of the individual responsible for the tape.

---

[1] Example: "Pioneer Venus Orbiter Electron Temperature Probe".

D-072950

```
                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

 ECORD 1      16 BYTES

  3 ELTE ELNE VS

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 1      16 BYTES

  3 ELTE ELNE VS

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 2      20 BYTES

(I8,I9,I5,I6,3F11.2)

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 3      61 BYTES

       0        0    0     0 9999999.00 9999999.00 9999999.00

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 4      61 BYTES

 1978339 54454817    1  -228 9999999.00     574.00      -2.10

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 5      61 BYTES

 1978339 54550817    1  -132    5470.00   12900.00      -0.42

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 6      61 BYTES

 1978339 54682817    1    12    3960.00   11800.00      -0.57

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT

RECORD 7      61 BYTES

 1978339 54814817    1   144    6900.00    1090.00       0.38

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT
```

12/5/78

```
RECORD 8      61 BYTES

 1978340 51262817    2  -444 9999999.00     243.00        2.84

                                              ASCII LIST OF $1$MUA0: UATAPE.DAT


RECORD 93060      61 BYTES

 1992281 71487748 5055   300 9999999.00     313.00       -0.86
```

10/7/92

78-051A-01D

78-051A-01D

PIONEER VENUS

IONOP., BOWSH. LOC., IPE-EUV

THIS DATA SET CONSISTS OF 3 TAPES. THESES TAPES ARE 9-TRACK, 6250 BPI, VAXED LABELED, WITH 3 FILES OF DATA AND CREATED ON AN IBM 360 COMPUTER. THE DD AND THE DC NUMBERS ALONG WITH THEIR TIME SPANS ARE AS FOLLOWS:

DD#	DC#	ORBITS	TIME SPANS
D-85876	C-29103	0001-1000	12/05/78 - 09/01/81
D-85877	C-29104	1001-2000	09/02/81 - 06/01/84
D-85878	C-29105	2001-3000	06/02/84 - 12/01/87

VOLUME LABLES

D-85876=VOL100001
D-85877=VOL101001
D-85878=VOL102001

D-85876

D 85876
C29103

```
Listing of save set(s)

Save set:          OUT0001.BCK
Written by:        THEIS
UIC:               [000161,000002]
Date:              23-SEP-1991 00:06:38.93
Command:           BACK/LOG/LIS=OUT0001.LIS SCRATCH$X2:[THEIS]*.DAT MSA0:OUT0001.BCK/INTER/LAB=00001
Operating system:  VAX/VMS version V5.4
BACKUP version:    V5.4
CPU ID register:   01380B0B
Node name:         _PACF::
Written on:        _PACF$MSA0:
Block size:        8192
Group size:        10
Buffer count:      43

[THEIS]OUT0001.DAT;1                                   18  18-SEP-1991 16:56
[THEIS]OUT0002.DAT;1                                   20  18-SEP-1991 16:58
[THEIS]OUT0003.DAT;1                                   41  18-SEP-1991 16:59
[THEIS]OUT0004.DAT;1                                   20  18-SEP-1991 17:00
[THEIS]OUT0005.DAT;1                                    6  18-SEP-1991 17:01
[THEIS]OUT0006.DAT;1                                    0  18-SEP-1991 17:01
[THEIS]OUT0007.DAT;1                                    0  18-SEP-1991 17:01
[THEIS]OUT0008.DAT;1                                    7  18-SEP-1991 17:01
[THEIS]OUT0009.DAT;1                                    0  18-SEP-1991 17:02
[THEIS]OUT0010.DAT;1                                    0  18-SEP-1991 17:03
[THEIS]OUT0011.DAT;1                                    0  18-SEP-1991 17:04
[THEIS]OUT0012.DAT;1                                    0  18-SEP-1991 17:05
[THEIS]OUT0013.DAT;1                                    2  18-SEP-1991 17:05
[THEIS]OUT0014.DAT;1                                    0  18-SEP-1991 17:06
[THEIS]OUT0015.DAT;1                                    0  18-SEP-1991 17:07
[THEIS]OUT0016.DAT;1                                    0  18-SEP-1991 17:08
[THEIS]OUT0017.DAT;1                                   11  18-SEP-1991 17:09
[THEIS]OUT0018.DAT;1                                    0  18-SEP-1991 17:10
```

D-85877

D85877
C29100

```
Listing of save set(s)

Save set:          OUT1001.BCK
Written by:        THEIS
UIC:               [000161,000002]
Date:              16-SEP-1991 17:18:54.51
Command:           BACK/LOG/DEN=6250/LIS=OUT1001.LIS SCRATCH$X2:[THEIS]*.DAT MSA0:OUT1001.BCK/INTER/LAB=
Operating system:  VAX/VMS version V5.4
BACKUP version:    V5.4
CPU ID register:   0138080B
Node name:         _PACF::
Written on:        _PACF$MSA0:
Block size:        8192
Group size:        10
Buffer count:      43

[THEIS]OUT1001.DAT;1                                  83  13-SEP-1991 22:05
[THEIS]OUT1002.DAT;1                                  36  13-SEP-1991 22:07
[THEIS]OUT1003.DAT;1                                  33  13-SEP-1991 22:08
[THEIS]OUT1004.DAT;1                                  72  13-SEP-1991 22:09
[THEIS]OUT1005.DAT;1                                  33  13-SEP-1991,22:11
[THEIS]OUT1006.DAT;1                                  72  13-SEP-1991 22:12
[THEIS]OUT1007.DAT;1                                  35  13-SEP-1991 22:13
[THEIS]OUT1993.DAT;1                                  18  16-SEP-1991 00:55
[THEIS]OUT1994.DAT;1                                   0  16-SEP-1991 00:56
[THEIS]OUT1995.DAT;1                                  22  16-SEP-1991 00:56
[THEIS]OUT1996.DAT;1                                  15  16-SEP-1991 00:57
[THEIS]OUT1997.DAT;1                                   8  16-SEP-1991 00:58
[THEIS]OUT1998.DAT;1                                  17  16-SEP-1991 00:58
[THEIS]OUT1999.DAT;1                                   8  16-SEP-1991 01:00
[THEIS]OUT2000.DAT;1                                  21  16-SEP-1991 01:00

Total of 999 files, 59332 blocks
End of save set
```

D-85878

D85818
[illegible]

```
Save set:                 OUT2001.BCK
Written by:               THEIS
UIC:                      [000161,000002]
Date:                      3-MAR-1992 19:03:57.69
Command:                  BACK/LOG/LIS=OUT0001.LIS SCRATCH$X2:[THEIS]*.DAT MSA0:OUT2001.BCK/INTER/LAB=02001
Operating system:         VAX/VMS version V5.4
BACKUP version:           V5.4
CPU ID register:          01380B0B
Node name:                _PACF::
Written on:               _PACF$MSA0:
Block size:               8192
Group size:               10
Buffer count:             43

[THEIS]OUT2001.DAT;1                                       1  19-FEB-1992 17:36
[THEIS]OUT2002.DAT;1                                       1  19-FEB-1992 17:36
[THEIS]OUT2003.DAT;1                                       0  19-FEB-1992 17:36
[THEIS]OUT2004.DAT;1                                       0  19-FEB-1992 17:37
[THEIS]OUT2005.DAT;1                                       1  19-FEB-1992 17:38
[THEIS]OUT2006.DAT;1                                       0  19-FEB-1992 17:39
[THEIS]OUT2007.DAT;1                                       0  19-FEB-1992 17:40
[THEIS]OUT2033.DAT;1                                       0  19-FEB-1992 17:52
[THEIS]OUT2034.DAT;1                                       1  19-FEB-1992 17:52
[THEIS]OUT2035.DAT;1                                       0  19-FEB-1992 17:52
[THEIS]OUT2036.DAT;1                                       1  19-FEB-1992 17:53
[THEIS]OUT2037.DAT;1                                       1  19-FEB-1992 17:54
[THEIS]OUT2038.DAT;1                                       1  19-FEB-1992 17:55
[illegible]
[THEIS]OUT2990.DAT;1                                      13   3-MAR-1992 18:29
[THEIS]OUT2991.DAT;1                                       7   3-MAR-1992 18:30
[THEIS]OUT2992.DAT;1                                       7   3-MAR-1992 18:31
[THEIS]OUT2993.DAT;1                                      16   3-MAR-1992 18:31
[THEIS]OUT2994.DAT;1                                       8   3-MAR-1992 18:33
[THEIS]OUT2995.DAT;1                                      21   3-MAR-1992 18:34
[THEIS]OUT2996.DAT;1                                       8   3-MAR-1992 18:35
[THEIS]OUT2997.DAT;1                                      12   3-MAR-1992 18:35
[THEIS]OUT2998.DAT;1                                       0   3-MAR-1992 18:37
[THEIS]OUT2999.DAT;1                                       0   3-MAR-1992 18:37
[THEIS]OUT3000.DAT;1                                      20   3-MAR-1992 18:37

Total of 972 files, 6441 blocks
End of save set
```

To: Ralph Post/ 933.0
NSSDC

March 16, 1992

From: L. H. Brace/914

Subject: Submission of Pioneer Venus OETP Data to the NSSDC

Attached is a magnetic tape which contains the OETP high resolution data file for orbits 2001 thru 3000 and the related ephemeris data that allows the location of the measurements to be assigned. The data from orbits 1-2000 were submitted earlier.

We are not further updating the OETP UADS file, or the Ionopause and Bow shock location files at this time.

LH Brace
Larry H. Brace
PI, PVOETP
Code 914

78-051A-00I, 01E

D8 5876

Pioneer Venus 78-051A-01D

78/12/5 - 09/01/81

345

```
                                        DUMP OF TAPE KM2011

  INPUT TAPE   KM2011   ON   HTC
  DATA INPUT       F9 NF=3 SR=2=1=2 SR=3=1=2

            FILE     INPUT       DATA RECORDS      MAX.          READ ERROR SUMMARY                 INPUT RETRIES
                     RECS.           INPUT         SIZE       PERM   ZERO 3   SHORT   UNDEF.    #REC S.   TOTAL#
               1        3            3              80          0        0       0        0         0         0

  FILE       2  RECORD          1  LENGTH      8192BYTES
  (       0)  00010004  01000100  01000000  00000000  00000000  0000C000  0000C000  00000000  01010100  8705F94A
  (      40)  00200000  00000000  4B4F5554  30303031  2E42434B  00000000  00000000  00000000  00000000  00000000
  (      80)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  (     120)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  (     160)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  (     200)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  (     240)  00000000  00000000  00000000  0000E441  E0000100  00000000  00000000  00000000  01010B00  01004F55
  (     280)  54303030  312E4243  4B510002  00424143  4B2F4C4F  472F4C49  53304F55  54303030  312F4C49  53205343
  (     320)  52415443  48245832  3A5B5448  4549535D  2A2E4441  54204D53  41303A4F  55543030  30312E42  434B2F49
  (     360)  4E544552  2F4C4142  3D4F3030  30310C00  04005448  45495320  20202020  20200400  05000200  71000800
  (     400)  06002063  89DDC1F0  94000200  07000004  04000800  56352E34  07000900  5F504143  463A3A04  000A000B
  (     440)  0B38010B  000B005F  50414346  244D5341  303A0400  1C005635  2E340400  5C101020  70000200  0E001A00
  (     480)  C2000F00  2B000000  00000000  00000000  F0004300  00000000  00000000  00000005  01011400  2A005B54
  (     520)  48454953  5D4F5554  30303031  2E444154  3B310200  2B000102  06002C00  3C988100  01000400  2E001400
  (     560)  00004400  2F000400  01800200  34000201  1A000000  14000000  1200C800  00000000  00000000  00000000
  (     600)  00000000  00000600  2D007391  01000000  02003000  0E000200  31000000  01003200  00040033  10000000
  (     640)  0002004B  00FF7F01  00500000  01005700  0004004F  00150000  00020035  00010008  003600A0  337A2061
  (     680)  ED940008  00370040  20272161  ED940008  00380000  00000000  00000008  00390000  00000000  00000004
  (     720)  00470004  00180002  00480080  EA02004A  00FF7F00  00000000  00000000  00000000  001C0400  00000000
  (     760)  01000000  00000000  1A002020  37383333  39202035  32383630  2E342020  20202031  2E343132  1A002020
  (     800)  37383333  39202035  32383631  2E392020  20202031  2E353634  1A002020  37383333  39202035  32383637
  (     840)  2E392020  20202031  2E343034  1A002020  37383333  39202035  32393133  2E392020  20202031  2E343039
  (     880)  1A002020  37383333  39202035  32393439  2E392020  20202031  2E323832  1A002020  37383333  39202035
  (     920)  32393737  2E392020  20202031  2E353439  1A002020  37383333  39202035  32393831  2E392020  20202031
  (     960)  2E363337  1A002020  37383333  39202035  33303431  2E392020  20202031  2E353731  1A002020  37383333
  (    1000)  39202035  33303737  2E392020  20202031  2E333333  1A002020  37383333  39202035  33313035  2E392020
  (    1040)  20202031  2E353339  1A002020  37383333  39202035  33313339  2E392020  20202031  2E363331  1A002020
  (    1080)  37383333  39202035  33313133  2E392020  20202031  2E323939  1A002020  37383333  39202035  33313137
  (    1120)  2E392020  20202031  2E353439  1A002020  37383333  39202035  33313233  2E392020  20202031  2E343136
  (    1160)  1A002020  37383333  39202035  33313237  2E392020  20202031  2E343635  1A002020  37383333  39202035
  (    1200)  33313335  2E392020  20202031  2E333933  1A002020  37383333  39202035  33313639  2E392020  20202031
  (    1240)  2E353139  1A002020  37383333  39202035  33323035  2E392020  20202031  2E343833  1A002020  37383333
  (    1280)  39202035  33323333  2E392020  20202031  2E353634  1A002020  37383333  39202035  33323337  2E392020
  (    1320)  20202031  2E363536  1A002020  37383333  39202035  33323431  2E392020  20202031  2E333038  1A002020
  (    1360)  37383333  39202035  33323435  2E392020  20202031  2E353439  1A002020  37383333  39202035  33323531
  (    1400)  2E392020  20202031  2E343537  1A002020  37383333  39202035  33323535  2E392020  20202031  2E353431
  (    1440)  1A002020  37383333  39202035  33323633  2E392020  20202031  2E343034  1A002020  37383333  39202035
  (    1480)  33323937  2E392020  20202031  2E363234  1A002020  37383333  39202035  33333039  2E392020  20202031
  (    1520)  2E353530  1A002020  37383333  39202035  33333135  2E392020  20202031  2E363537  1A002020  37383333
  (    1560)  39202035  33333139  2E392020  20202031  2E363833  1A002020  37383333  39202035  33333333  2E392020
  (    1600)  20202031  2E353039  1A002020  37383333  39202035  33333337  2E392020  20202031  2E343834  1A002020
  (    1640)  37383333  39202035  33333631  2E392020  20202031  2E353634  1A002020  37383333  39202035  33333733
  (    1680)  2E392020  20202031  2E363131  1A002020  37383333  39202035  33333739  2E392020  20202031  2E343337
  (    1720)  1A002020  37383333  39202035  33333937  2E392020  20202031  2E353339  1A002020  37383333  39202035
  (    1760)  33343031  2E392020  20202031  2E353336  1A002020  37383333  39202035  33343035  2E392020  20202030
  (    1800)  2E383835  1A002020  37383333  39202035  33343135  2E392020  20202031  2E333231  1A002020  37383333
  (    1840)  39202035  33343139  2E392020  20202031  2E353237  1A002020  37383333  39202035  33343235  2E392020
  (    1880)  20202031  2E353431  1A002020  37383333  39202035  33343631  2E392020  20202031  2E333634  1A002020
  (    1920)  37383333  39202035  33343839  2E392020  20202031  2E353237  1A002020  37383333  39202035  33353031
  (    1960)  2E392020  20202031  2E353838  1A002020  37383333  39202035  33353037  2E392020  20202031  2E343738
  (    2000)  1A002020  37383333  39202035  33353533  2E392020  20202031  2E353633  1A002020  37383333  39202035
  (    2040)  33353839  2E392020  20202031  2E343335  1A002020  37383333  39202035  33363137  2E392020  20202031
  (    2080)  2E353237  1A002020  37383333  39202035  33363831  2E392020  20202031  2E353137  1A002020  37383333
  (    2120)  39202035  33373137  2E392020  20202031  2E343233  1A002020  37383333  39202035  33373435  2E392020
```

7,

78

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```
(   7080)   30202035  32313131  2E332020  20202032  2E34373[illegible]  1A002020  37383334  30202035  32313238  2E382020
(   7120)   20202031  2E373839  1A002020  37383334  30202035  32313332  2E382020  20202032  2E323036  1A002020
(   7160)   37383334  30202035  32313336  2E382020  20202032  2E313039  1A002020  37383334  30202035  32313430
(   7200)   2E382020  20202031  2E393739  1A002020  37383334  30202035  32313633  2E332020  20202031  2E353835
(   7240)   1A002020  37383334  30202035  32313637  2E332020  20202031  2E383639  1A002020  37383334  30202035
(   7280)   32313731  2E332020  20202031  2E393738  1A002020  37383334  30202035  32313735  2E332020  20202031
(   7320)   2E363337  1A002020  37383334  30202035  32313932  2E382020  20202031  2E393636  1A002020  37383334
(   7360)   30202035  32313936  2E382020  20202031  2E393934  1A002020  37383334  30202035  32323030  2E382020
(   7400)   20202031  2E353933  1A002020  37383334  30202035  32323034  2E382020  20202031  2E393739  1A002020
(   7440)   37383334  30202035  32323237  2E332020  20202031  2E383132  1A002020  37383334  30202035  32323331
(   7480)   2E332020  20202031  2E393335  1A002020  37383334  30202035  32323335  2E332020  20202031  2E383933
(   7520)   1A002020  37383334  30202035  32323339  2E332020  20202031  2E353431  1A002020  37383334  30202035
(   7560)   32323536  2E382020  20202031  2E393032  1A002020  37383334  30202035  32323630  2E382020  20202031
(   7600)   2E383736  1A002020  37383334  30202035  32323634  2E382020  20202031  2E383537  1A002020  37383334
(   7640)   30202035  32323638  2E382020  20202031  2E393539  1A002020  37383334  30202035  32323931  2E332020
(   7680)   20202031  2E383939  1A002020  37383334  30202035  32323935  2E332020  20202031  00010000  00000000
(   7720)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7760)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7800)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7840)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7880)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7920)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   7960)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   8000)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   8040)   00000000  00000000  00000000  00000100  00000000  00000000  00000000  00000000  00000000  00000000
(   8080)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(   8120)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00010000
(   8160)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

             FILE    INPUT    DATA RECORDS      MAX.            READ ERROR SUMMARY            INPUT RETRIES
                     RECS.       INPUT          SIZE      PERM   ZERO B   SHORT   UNDEF.   #RECS.   TOTAL#
                2    1969     1969              8192        0       0       0       0        0        0

     FILE       3   RECORD          1   LENGTH      80BYTES
     (        0)   454F4631  4F555430  3030312E  42434B20  20202020  2F4F3030  30312030  30303130  30303130  30303130
     (       40)   30323931  32363620  39313236  36203134  31393639  44454356  4C534241  434B5550  20202020  20202020

     FILE       3   RECORD          2   LENGTH      80BYTES
     (        0)   454F4632  46303831  39323038  31393220  20202020  20202020  20202020  20202020  20202020  40202020
     (       40)   20202020  20202020  20203030  20202020  20202020  20202020  20202020  20202020  20202020  20202020

             FILE    INPUT    DATA RECORDS      MAX.            READ ERROR SUMMARY            INPUT RETRIES
                     RECS.       INPUT          SIZE      PERM   ZERO B   SHORT   UNDEF.   #RECS.   TOTAL#
                3       2     2                 80          0       0       0       0        0        0
   ******        EOF ON COMPLETION OF DUMP FOR REQUEST SR=3=1=2

    EOJ          DUMP STOPPED AFTER FILE    3          # OF PERMANENT READ ERRORS  0

   START TIME 04/17/92  16:04:49          STOP TIME 04/17/92  16:06:21

   $$
   $ASS IN HT1
   $EXE TPDUMP BS
```

```
$ASS IN HT1
$NOP
$NOP
$NOP
$NOP  ******************** KM2011 *********************  D85876
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1               FILE NO.   1
[illegible]D   1               LENGTH   80
VOL100001                                                             3

 TAPE NO.   1               FILE NO.   1
 RECORD   2                 LENGTH   8
HDR1OUT0001.BCK      00001 0001000100010 0 91266 91266 000000DECVMSBACKUP

 TAPE NO.   1               FILE NO.   1
 RECORD   3                 LENGTH   8
HDR2F0819208192                    M            00

***** JOB DONE.
$ASS IN HT0
$NOP
$NOP
$NOP
$NOP  **************** KM2014 ****************  D85877
$EXE TFLIST BS

INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1               FILE NO.   1
 RECORD   1                 LENGTH   8
VOL101001                                                             3

 TAPE NO.   1               FILE NO.   1
 RECORD   2                 LENGTH   80
HDR1OUT1001.BCK      01001 0001000100010 10 91259 91259 000000DECVMSBACKUP

 TAPE NO.   1               FILE NO.   1
 RECORD   3                 LENGTH   8
HDR2F0819208192                    M            00

***** JOB DONE.
$NOP
$NOP
$NOP
$NOP  ****************** KM2017 ********************D85878
$EXE TFLIST BS

INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1               FILE NO.   1
 RECORD   1                 LENGTH   8
VOL102001                                                             3

 TAPE NO.   1               FILE NO.   1
```

```
 RECORD    2                 LENGTH   80
HDR1OUT2001.BCK         02101 000100010001 0 92063 92063 000000DECVMSBACKUP

 TAPE NO.    1              FILE NO.   1
 RECORD    3                 LENGTH   8
HDR2F0819208192                          M                  00

***** JOB DONE.
$WEO LFS
```

78-051A-00I
78-051A-01E

PIONEER VENUS

HI- RES NE (MIN 1-S)

THIS DATA SET CONSISTS OF 1 TAPE. THE TAPE IS 9-TRACK,, 1600 BPI, VAXED LABELED, WITH 6 FILES OF DATA AND CREATED ON AN 360 IBM COMPUTER.THE DD AND DC NUMBER ALONG WITH THE TIME SPAN IS AS FOLLOWS:

D#	C#	TIME SPAN
D-85879	C-29106	12/05/78-12/01/87

VOLUME LABEL

D-85879=PVOETP

D85879
78-051A-001, 01E

```
Tape Label PVOETP, Dens=1600
Directory MTA0:[]

READ_ME_FIRST.DOC;3
TOTAL_EUV_FLUX_AS_IPE.DAT;1
IONOPAUSE.DAT;1
BOWSHOCK.DAT;1
ORBIT.FOR;1
ORBIT.PVD;1

Total of 6 files.
```

D-85879/29106

Pioneer Venus

```
                                DUMP OF TAPE KM2

INPUT TAPE   KM2 2   ON   HT1
DATA INPUT     HJ9 NF=16 SR=5=1=2 SR=6=1=2 SR=17=1=2 SR=18=1=2

DATA INPUT     H9 NF=18 SR=5=1=2 SR=6=1=2 SR=17=1=2 SR=18=1=2

          FILE   INPUT    DATA RECORDS    MAX.          READ ERROR SUMMARY                INPUT RETRIES
                 RECS.       INPUT        SIZE      PERM   ZERO B    SHORT   UNDEF.   #RECS.   TOTAL#
            1      5           5           82          0       1        0        0        0        0

  FILE       5   RECORD         1   LENGTH    2048BYTES 18.339
  (     0)  30313036  20446174  65732067  38333339  20373833  34382020  4F726269  74732020  20202031  20202031
  (    40)  30206971  65202031  302E3330  2031302E  33302031  302E3330  2031302E  33302031  302E3330  2031302E
  (    80)  33302031  302E3331  2031302E  33302031  302E3330  2031302E  33303031  30362044  61746573  20373833
  (   120)  34392037  38333538  20204F72  62697473  20202020  31312D20  20323020  69706520  2031302E  33302031
  (   160)  302E3330  2031302E  33302031  302E3330  2031302E  37302031  302E3330  2031302E  33302031  302E3330
  (   200)  2031302E  33302031  302E3331  30313036  20446174  65732037  38333539  20373931  30332020  4F726269
  (   240)  74732020  20203231  2D202033  30206971  65202031  302E3330  2031302E  33302031  302E3330  2031302E
  (   280)  33302031  302E3330  2031302E  33302031  302E3330  2031302E  33302031  302E3330  2031302E  33303031
  (   320)  30362044  61746573  20373930  30342037  39303133  20204F72  62697473  20202020  33312D20  20343020
  (   360)  69706520  2031302E  33302031  302E3330  2031302E  33302031  302E3330  2031302E  33302031  302E3330
  (   400)  2031302E  33302031  302E3330  2031302E  33302031  302E3330  30313036  20446174  65732037  39303134
  (   440)  20373930  32332020  4F726269  74732020  20203431  20202035  30206970  65202031  302E3330  2031302E
  (   480)  33302031  302E3331  2031302E  33302031  302E3331  2031302E  33302031  302E3032  2031302E  30322031
  (   520)  302E3032  2031302E  30322031  30362044  61746573  20373930  30342037  39303333  20204F72  62697473
  (   560)  20202020  35312D20  20363020  69706520  2031302E  30322031  302E3032  2031302E  30322031  302E3131
  (   600)  2031302E  39382031  302E3938  2031302E  39382031  302E3938  2031302E  39382031  302E3938  30313036
  (   640)  20446174  65732037  39303734  20373930  34332020  4F726269  74732020  20203631  20202037  30206970
  (   680)  65202031  302E3938  2031302E  39382031  302E3938  2031302E  39382031  302E3938  2031302E  39382031
  (   720)  302E3938  2031302E  39382031  302E3939  2031312E  31393031  31362044  61746573  20373931  34342037
  (   760)  39303533  20204F72  62697473  20202020  37312D20  20383020  69706520  2031312E  30332031  312E3139
  (   800)  2031302E  33342031  392E3734  2031302E  33392031  312E3430  2031312E  36312031  312E3430  2031312E
  (   840)  34302031  312E3738  30313036  20446174  65732037  39303534  20373933  36332020  4F726269  74732020
  (   880)  20203831  20202039  30206970  65202020  392E3532  2020392E  37302020  392E3730  2031302E  31312020
  (   920)  392E3937  2020392E  39372020  392E3937  2020392E  36352020  392E3532  2020392E  35323031  30362044
  (   960)  61746573  20373933  36342037  39303733  20204F72  62697473  20202020  39312D20  31303020  69706520
  (  1000)  2020392E  37302031  302E3339  2031302E  35342031  302E3539  2031302E  37382031  302E3833  2031302E
  (  1040)  39382031  302E3838  2031302E  38332031  312E3239  30313036  20446174  65732037  39303734  20373930
  (  1080)  38332020  4F726269  74732020  20313031  20203131  30206970  65202031  312E3239  2031312E  30382031
  (  1120)  312E3033  2031312E  36312031  312E3832  2031312E  36362031  302E3933  2031302E  38332031  302E3131
  (  1160)  2031302E  31313031  30362044  61746573  20373930  38342037  39303933  20204F72  62697473  20202031
  (  1200)  31312D20  31323020  69706520  2031312E  38332031  312E3539  2031312E  39382031  312E3234  2031302E
  (  1240)  38382031  302E3838  2031312E  38332031  302E3833  2031312E  38382031  302E3131  30313036  20446174
  (  1280)  65732037  39303934  20373931  30332020  4F726269  74732020  20313231  20203133  30206970  65202031
  (  1320)  312E3534  2031302E  35392031  302E3534  2031302E  35342031  302E3235  2031302E  30322031  302E3032
  (  1360)  2031312E  31322020  392E3739  2020392E  35373031  30362044  61746573  20373931  30342037  39313133
  (  1400)  20204F72  62697473  20202031  33312D20  31343020  69706520  2020392E  35322020  392E3532  2020392E
  (  1440)  35372020  392E3537  2020392E  37302020  392E3532  2020392E  35322020  392E3532  2020392E  34382020
  (  1480)  392E3438  30313036  20446174  65732037  39313134  20373931  32332020  4F726269  74732020  20313431
  (  1520)  20203135  30206970  65202020  392E3635  2020392E  36352020  392E3532  2020392E  34382020  392E3438
  (  1560)  2020392E  32362020  382E3836  2020382E  36352020  382E3536  2020392E  31353031  31362044  61746573
  (  1600)  20373931  32342037  39313333  20204F72  62697473  20202031  35312D20  31363020  69706520  2020392E
  (  1640)  30392020  392E3039  2020392E  34382020  392E3937  2020392E  35322020  392E3532  2020392E  35322020
  (  1680)  392E3532  2020392E  35302020  392E3438  31313036  20446174  65732037  39313334  20373931  34332120
  (  1720)  4F726269  74732020  20313631  20203137  30206970  65202020  392E3438  2020392E  33312031  302E3131
  (  1760)  2031302E  31312031  302E3136  2031302E  31362031  302E3136  2031302E  36382031  302E3838  2031312E
  (  1800)  31393031  31362044  61746573  20373931  34342037  39313533  20204F72  62697473  20202031  37312D20
  (  1840)  31383020  69706520  2031312E  38382031  312E3131  2020392E  35372020  392E3537  2020392E  36352020
  (  1880)  392E3537  2020392E  35372020  392E3331  2020392E  31342020  392E3339  30313136  20446174  65732037
  (  1920)  39313534  20373931  36332020  4F726269  74732020  20313831  20203139  30206970  65202020  392E3635
  (  1960)  2020392E  33392020  392E3339  2020392E  31342020  392E3339  2020382E  39372020  392E3339  2020392E
  (  2000)  31342020  392E3537  2031302E  31315E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E
  (  2040)  5E5E5E5E  5E5E5E5E
```

```
   (  240)   A4340100  8548A533  19449A09  1A480A71  57405102  D343D1FE  20448FC2  B5428FC2  A9480344  51C185EB
   (  280)   A544D7A3  8548E032  B2C30000  EE42F251  054040E1  A5340100  8648B33E  1C44EC6E  1A48597E  5740CECC
   (  320)   D343B90D  20448FC2  B54214AE  A948E142  53C13333  A6447B74  86489332  B1C3A4F0  00437B14  05493FDB
   (  360)   A6340100  864849B7  1F44DFDF  1A48C46F  574010C7  D3431020  20440C0C  B5429A59  A948F641  55C1B81E
   (  400)   A7441F45  8548BCB2  B1C3C3F5  04430000  0540BFD6  A7340100  8748C638  2344EC51  1A486C6F  574028C1
   (  440)   D343072E  20440DCC  B5429A59  A9485941  55C18FC2  A844C315  8748F433  B1C3C3F5  04430000  05401ED0
   (  480)   AE340100  87486CBA  27440100  1A48396F  574001BB  D3432C3F  20440CC0  B5421F85  A9480641  57C13D0A
   (  520)   A8441FE5  87489FB6  B1C3C3F5  06430000  054087CA  AE340100  88485337  13446FE2  1A48DE61  574027D8
   (  560)   D3434762  20440CC0  B542AE47  A9481123  57C114AE  A944C3B5  88482D34  B1C3E1FA  2343F628  0540F1E5
   (  600)   AA340100  884853A2  1744F047  1A48AE60  574048D1  D343A66F  20448FC2  B542AF47  A9481F29  58C1EC51
   (  640)   AA446686  88485DA1  B1C385FB  30430000  0540EEDE  AE340100  89484E0C  1B44EE5C  1A48EF5F  574050CA
   (  680)   D343067F  20448FC2  B5423333  A9480027  58C1C3F5  AC440AE7  89486109  B1C3A4F0  32430000  054047DA
   (  720)   AC340100  8948DF75  1F445A84  1A48615F  574048C3  D343318E  20441FC5  B542381E  A948FB26  58C1C3F5
   (  760)   AC44AE27  89484C72  B1C3E1FA  34430000  054022C1  AD340100  89486CDF  2344D1E2  1A48125F  5740F4BB
   (  800)   D34338A1  20448FC2  B5423D0A  A9487A26  58C1C3F5  AC440AF7  8948A3DC  B2C30000  36430000  054023E2
   (  840)   AE340100  8A482049  28446200  1A48D35E  57408E34  D343BBB0  20441FC5  B442C3F5  A9481D26  58C1C3F5
   (  880)   AD44AEC7  8A486945  B2C31F05  39433333  05409D84  AF340100  8A48C4B3  2C4442E5  1A48AC5E  5740F1AC
   (  920)   D3438FC0  20441FC5  B44245E1  A948CF25  58C1C3F5  AE445298  8A484FB0  B2C31F05  3B4385FB  054005AD
   (  960)   B0340100  8B488616  1C440094  1A48D74F  574013D7  D34326E0  2044CDCC  B44252B8  A948DE06  58C1EC51
   ( 1000)   AF44AE67  8B48EE13  AEC348E1  AE43B81E  04402BAE  B1340100  83480A60  1544773F  1A48644A  5740DBCE
   ( 1040)   D343DFF2  2044CDCC  B442D7A3  A9487004  57C114AE  B0445238  8B48435B  AEC371DD  AE43856B  04406EA6
   ( 1080)   B2340100  8B48DFA8  1A440003  1A48B649  5740C4C6  D44398C1  2044CDCC  B4425C8F  A9486003  57C13D0A
   ( 1120)   B144AE47  8B4883A5  AEC3F6A8  AE43D3F5  07447486  B3740100  834824F1  1E44D7E3  1A481849  574083BE
   ( 1160)   D443DB10  20445CCF  B442E17A  A948E902  56C16666  B1440AD7  8548E3EC  AEC37B94  AE43ECD1  04407EAE
   ( 1200)   B4340100  8C483A39  2344C7CB  1A48B648  574046B6  D4434D1E  20445CCF  B4426666  A948B801  55C1B81E
   ( 1240)   B244AEA7  8C48A637  AEC33D9A  E0432D4C  04404292  BE340100  3C487D81  284444CB  1A489348  5740F1AD
   ( 1280)   D443252A  2044ECD1  B442EC01  A9488101  53C10AD7  B3440A77  8C48837F  B0C30080  B0435C8F  04407EB2
   ( 1320)   B6340100  8C48F6C9  2D44ABC6  1A487348  5740A4A5  D4439E37  20447BD4  B442713D  A9484901  52C15C8F
   ( 1360)   0C40CDCC  8C48C5C3  AEC3E17A  B1436666  04402299  B7340100  8D482F0B  0D44DFAF  1A489533  574074D5
   ( 1400)   D443AD64  2044CDCC  B4420000  A848030F  E0C1D7A3  1A4148E1  8D48CC0E  AEC37B14  E443E1EA  0541385E
   ( 1440)   E8340100  8D48E127  12448EDF  1A48522D  574036CB  D4436062  204429DC  B4427B14  A848B8D4  4FC1295C
   ( 1480)   72415C8F  8D48EA23  ADC36666  B443AE47  0540B657  B9340100  8D485C42  1744F0C7  1A48CA2B  5740AAC2
   ( 1520)   D4438D68  2044D7E3  B4407B04  A84837D2  4DC1A470  AD41B81E  8D48E43E  B3C348E1  1C4471FD  0540EE4F
   ( 1560)   BA340100  8D48935B  1C44A400  1A48DE2A  574045BA  D4434876  204448E1  B4420000  A848A1D0  4AC148F1
   ( 1600)   E041D7A3  8D481757  B3C3713D  09441F45  05406F45  BE340100  8D48D674  214452B8  1A48A52A  5740DDB1
   ( 1640)   D443A97F  2044D7E3  B34285EB  A84853D0  48C1C3F5  1A42713D  8D48D16F  B3C3E6A8  1B4429DC  0540673C
   ( 1680)   BC340100  8D48268E  2644094C  1A4885DA  574080A9  D443CC87  2044D7E3  B34285EB  A84821DC  46C16666
   ( 1720)   2442F628  8D48548D  B3C37394  1044D763  05409432  B7340100  8D488AA7  2B44A6EB  1A48662A  574023A1
   ( 1760)   D443126E  2044F6E6  B3420AD7  A848EECF  43C10AD7  3D4285FB  8D48CCA6  B3C3E17A  1044B8DE  05405325
   ( 1800)   BE340100  8D48DBB9  0D440CE7  1A48EC16  574085CD  D4433DB4  204448E1  B3429A59  A848E1AF  41C1AF47
   ( 1840)   57420AD7  8D488B36  B3C3EC8F  29C45C0F  0540442C  BE340100  8D48E8BE  13444200  1A484815  5740BBC4
   ( 1880)   D44328AF  204433F3  B34214AE  A8483FAD  3EC17B14  71429A99  8D48A1AC  B3C30080  27440040  05407523
   ( 1920)   C0340100  8D4878A7  1744F202  1A48CF14  574097BC  D443EFB2  2044C3F5  B34214AE  A84878AC  3AC148E1
   ( 1960)   854214AE  8D48E3A2  B3C329DC  1A4471FD  05401019  C1340100  8D48369D  1C44AA51  1A483614  57408CB4
   ( 2000)   D4432936  2044E1FA  B34214AE  A84878A3  37C114AE  B342D7A3  8D483F9A  B3C35238  16440A97  05406C0E
   ( 2040)   5E5E5E5E  5E5E5E5E

            FILE    INPUT    DATA RECORDS      MAX.          READ ERROR SUMMARY           INPUT RETRIES
                    RECS.       INPUT          SIZE     PERM   ZERC B   SHCRT   UNDEF.   #RECS.   TOTAL#
             17      137      137            23040       0        0       0       0        0        0

      FILE       18   RECORD          1   LENGTH      80BYTES
   (    0)   454F4631  4F524249  540E5036  44202020  20202020  2020F64F  45545030  30303130  30313630  30303130
   (   40)   30203931  32363020  39313236  30203030  30313337  44454346  494C4531  31412020  20202020  20202020

      FILE       18   RECORD          2   LENGTH      80BYTES
   (    0)   454F4632  46303230  34303031  30363020  20202020  20202020  20202020  20202020  20202020  4D202020
   (   40)   20201720  20202020  20202020  20202020  20201720  20202020  20202020  20202020  20201720  20202020

            FILE    INPUT    DATA RECORDS      MAX.          READ ERROR SUMMARY           INPUT RETRIES
                    RECS.       INPUT          SIZE     PERM   ZERO B   SHCRT   UNDEF.   #RECS.   TOTAL#
             18       4         4             80         0        0       0       0        0        0

   EOJ          DUMP STOPPED AFTER FILE   18         # OF PERMANENT READ ERRORS   0

   START TIME 04/29/92  09:04:03         STOP TIME 04/29/92  09:05:43
```

D-85879 / C29106

```
$REW IN
$NOP
$NOF
$NOP
$NOP  ******************* KM2019 ****************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1                FILE NO.   1
 RECORD   1                  LENGTH   8
VOL1PVCFTP                                                         3

 TAPE NC.   1                FILE NO.   1
 RECORD   2                  LENGTH   8
HDR1READ_ME_FIRST.DOCPVOETP0001 001   1 2 9126  00000 000000DECFILE11A

 TAPE NO.   1                FILE NO.   1
 RECORD   3                  LENGTH   8
HDR2D 2 48   83

 TAPE NO.   1                FILE NO.   1
 RECORD   4                  LENGTH   8
HDR3 4F 2 2          1                    FF

 TAPE NO.   1                FILE NO.   1
 RECORD   5                  LENGTH   8
HDR4

***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=4 1 1 18

 TAPE NO.   1                FILE NO.   18
 RECORD   1                  LENGTH   8
EOF1ORBIT.PVD          PVOETP  1   5   1   9126  9126     137DECFILE11A

 TAPE NO.   1                FILE NO.   18
 RECORD   2                  LENGTH   8
EOF2F 2 48   6                    M

 TAPE NO.   1                FILE NO.   18
 RECORD   3                  LENGTH   8
EOF3 3C      1              1               3C

 TAPE NC.   1                FILE NO.   18
 RECORD   4                  LENGTH   8
EOF4

***** JOB DONE.
$EXE TFDUMP BS
```